

Amendment and Response under 37 C.F.R. 1.116

Applicant: Kas Kasravi et al.

Serial No.: 10/766,308

Filed: January 27, 2004

Docket No.: 200901335-1

Title: SYSTEM AND METHOD FOR COMPARATIVE ANALYSIS OF TEXTUAL DOCUMENTS

IN THE CLAIMS

Please amend claims 1, 14, and 34 as follows:

1. (Currently Amended) A computer-implemented method of comparing the semantic content of two or more documents, comprising:

accessing a plurality of documents;

performing a linguistic analysis on each document;

defining a semantic vector for each document based on the linguistic analysis, said semantic vector having multiple components, wherein each component of said semantic vector has at least:

a term included in the document or a synonym of said term;

a weighting factor relating to an importance, based on characteristics of the document, of said term; and

a frequency value relating to a number of occurrences of said term;

processing the semantic vector by a digital computer; and

comparing a semantic vector of an identified document to the semantic vector for each document in the plurality of documents to determine at least one document semantically similar to the identified document.

2. (Previously Presented) The method of claim 1, wherein the linguistic analysis comprises sentence analysis.

3. (Previously Presented) The method of claim 2, wherein the sentence analysis comprises a syntactic analysis and a semantic analysis.

4. (Canceled)

5. (Canceled)

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6. (Previously Presented) The method of claim 1, wherein each component of the semantic vector for at least one of the documents comprises multiple dimensions.

7. (Previously Presented) The method of claim 1, wherein each component of the semantic vector for at least one of the documents further comprises a subordinate concept value.

8. (Canceled)

9. (Canceled)

10. (Previously Presented) The method of claim 1, wherein some of the components of the semantic vector for at least one of the documents have main term – subordinate term pairs as their first value.

11. (Previously Presented) The method of claim 1, wherein the semantic vector comprises a multi-dimensional vector defined by the content of a semantic net.

12. (Previously Presented) The method of claim 11, wherein the content of the semantic net is augmented by relative weights, strengths, or frequencies of occurrence of the features within the semantic net.

13. (Previously Presented) The method of claim 37, wherein an output of said defined algorithm is a measure of at least one of semantic distance, semantic similarity, semantic dissimilarity, degree of patentable novelty and degree of anticipation.

14. (Currently Amended) A computer-implemented method of comparing two or more documents, comprising:

linguistically analyzing a plurality of documents to identify at least one term group in each document, each term group comprising a main term and at least one subordinate term semantically related to the main term;

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generating a semantic vector associated with each document, the semantic vector comprising a plurality of components, each component including:

a term group in the document;

a frequency value relating to a number of occurrences of the term group; and

a weighting factor relating to an importance, based on characteristics of the

document, of at least part of the term group;

processing the semantic vector by a digital computer; and

comparing a semantic vector of an identified document to the semantic vector for each document in the plurality of documents to determine at least one document semantically similar to the identified document using a defined metric, wherein said metric measures the semantic distance between documents as a function of at least the frequency values included in the semantic vectors for the documents.

15. (Canceled)

16. (Previously Presented) The method of claim 14, wherein the main term includes synonyms of the main term.

17. (Previously Presented) The method of claim 14, wherein one or more of said two or more documents are located using an autonomous software or 'bot program.

18. (Previously Presented) The method of claim 17, wherein the 'bot program automatically analyzes each document in a defined domain or network by executing a series of rules and assigning an overall score to the document.

19. (Previously Presented) The method of claim 18, wherein all documents with a score above a defined threshold are linguistically analyzed.

20. (Previously Presented) The method of claim 14, wherein the semantic vector is a quantification of the semantic content of each document.

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21. (Previously Presented) The method of claim 14, wherein each component has multiple dimensions.

22. (Canceled)

23. (Previously Presented) A system for comparing two or more documents, comprising:

a document inputter, arranged to access a plurality of documents;

a semantic analyzer, arranged to perform a linguistic analysis on each document to identify at least one term group in the document, each term group comprising a main term and at least one subordinate term semantically related to the main term;

a semantic quantifier, arranged to output a quantified representation of a semantic content of each document, the quantified representation based at least in part on:

a term group in the document; and

a weighting factor relating to an importance, based on characteristics of the document, of at least part of the term group; and

a comparator, arranged to compare the quantified representations using a defined algorithm, wherein said defined algorithm measures the semantic distance between documents as a function of at least the weighting factors associated with the quantified representations for the documents to determine at least one document in the plurality of documents semantically similar to an identified document.

24. (Previously Presented) A system for comparing two or more documents, comprising:

a document inputter, arranged to access a plurality of documents;

a semantic analyzer, arranged to perform a linguistic analysis on each document to identify at least one term group in the document, each term group comprising a main term and at least one subordinate term semantically related to the main term;

a semantic vector generator, arranged to output a semantic vector associated with each document, each semantic vector comprising a plurality of components, each component including:

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a term group in the document;
a frequency value relating to a number of occurrences of the term group; and
a weighting factor relating to an importance, based on characteristics of the document, of at least part of the term group; and
a comparator, arranged to compare the semantic vectors using a defined metric, wherein said metric measures the semantic distance between documents as a function of at least the frequency values included in the semantic vectors for the documents to determine at least one document in the plurality of documents semantically similar to an identified document.

25. (Canceled)

26. (Previously Presented) A computer program product comprising a computer usable medium having computer readable program code means embodied therein, the computer readable program code means in said computer program product comprising means for causing a computer to:

access a plurality of documents;
perform a linguistic analysis on each document to identify at least one term group in the document, each term group comprising a main term and at least one subordinate term semantically related to the main term;
output a quantified representation of a semantic content of each document, the quantified representation based at least in part on:
a term group in the document;
a frequency value relating to a number of occurrences of the term group; and
a weighting factor relating to an importance, based on characteristics of the document, of at least part of the term group; and
compare the quantified representations using a defined algorithm, wherein said defined metric measures the semantic distance between documents as a function of at least the frequency values associated with the quantified representations for the documents to determine at least one document in the plurality of documents semantically similar to an identified document.

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27. (Previously Presented) A computer program product comprising a computer usable medium having computer readable program code means embodied therein, the computer readable program code means in said computer program product comprising means for causing a computer to:

linguistically analyze a plurality of documents to identify at least one term group in the document, each term group comprising a main term and at least one subordinate term semantically related to the main term;

generate a semantic vector associated with each document, each semantic vector comprising a plurality of components, each component including:

a term group in the document; and

a weighting factor relating to an importance, based on characteristics of the document, of at least part of the term group; and

compare the semantic vectors using a defined metric, wherein said metric measures the semantic distance between semantic vectors as a function of at least the weighting factors included in the semantic vectors to determine at least one document in the plurality of documents semantically similar to an identified document.

28. (Previously Presented) The computer program product of claim 27, wherein the computer readable program code means in said computer program product further comprises means for causing a computer to:

identify one or more of said two or more documents using an autonomous software or 'bot program.

29. (Previously Presented) The computer program product of claim 28, wherein said 'bot program automatically analyzes each document in a defined domain or network by executing a series of rules and assigning an overall score to the document.

30. (Previously Presented) The computer program product of claim 27, wherein the semantic vector is a quantification of the semantic content of each document.

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31. (Previously Presented) The computer program product of claim 27, wherein an output of said defined metric is a measure of at least one of semantic distance, semantic similarity, semantic dissimilarity, degree of patentable novelty and degree of anticipation.

32. (Canceled)

33. (Previously Presented) A system for comparing two or more documents, comprising:

a document inputter, arranged to access two or more documents;

a semantic analyzer, arranged to perform a linguistic analysis on each document;

a semantic vector generator, arranged to output a semantic vector associated with each document; and

a comparator, arranged to compare the semantic vectors using a defined metric, wherein said defined metric is one of:

$$[\text{Sqrt}(f_1^2 + f_2^2 + f_3^2 + f_4^2 + \dots + f_{(N-1)}^2 f_N^2)/n] * 100$$
, wherein f is a difference in frequency of a common term between two documents and n is the number of terms those documents have in common; or

$$\text{Sqrt}(\text{sum}((w-\text{Delta})^2 * w-\text{Avg}))/(\text{Log}(n)^3 * 1000)$$
, wherein w-Delta is the difference in weight between two common terms, w-Avg is the average weight between two common terms, and n is the number of common terms, between two documents.

34. (Currently Amended) A computer-implemented method of comparing two or more documents, comprising:

linguistically analyzing a plurality of documents;

generating a semantic vector associated with each document;

processing the semantic vector by a digital computer; and

comparing the semantic vectors using a defined metric, wherein said defined metric is one of:

$$[\text{Sqrt}(f_1^2 + f_2^2 + f_3^2 + f_4^2 + \dots + f_{(N-1)}^2 f_N^2)/n] * 100$$
, wherein f is a difference in frequency of a common term between documents and n is the number of terms those documents have in common; or

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$\text{Sqrt}(\text{sum}((w-\text{Delta})^2 * w-\text{Avg})) / (\text{Log}(n)^3 * 1000)$, wherein W-Delta is the difference in weight between two common terms, w-Avg is the average weight between two common terms, and n is the number of common terms, between documents to determine at least one document in the plurality of documents semantically similar to an identified document.

35. (Previously Presented) A computer program product comprising a computer usable medium having computer readable program code means embodied therein, the computer readable program code means in said computer program product comprising means for causing a computer to access two or more documents;
perform a linguistic analysis on each document;
output a quantified representation of a semantic content of each document; and
compare the quantified representations using a defined algorithm, wherein said defined algorithm is one of:

$[\text{Sqrt}(f_1^2 + f_2^2 + f_3^2 + f_4^2 + \dots + f_{(N-1)}^2 f_N^2) / n] * 100$, wherein f is a difference in frequency of a common term between two documents and n is the number of terms those documents have in common; or

$\text{Sqrt}(\text{sum}((w-\text{Delta})^2 * w-\text{Avg})) / (\text{Log}(n)^3 * 1000)$, wherein w-Delta is the difference in weight between two common terms, w-Avg is the average weight between two common terms, and n is the number of common terms, between two documents.

36. (Previously Presented) The method of claim 1, wherein said term comprises at least one of a word or a phrase.

37. (Previously Presented) The method of claim 1, further comprising comparing the semantic vectors based on a defined algorithm.

38. (Previously Presented) The method of claim 14, wherein the at least one subordinate term includes synonyms of one of the subordinate terms.

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39. (Previously Presented) The method of claim 14, wherein one or more of the at least one subordinate term or the main term comprises a phrase.

40. (Previously Presented) The method of claim 14, wherein the weighting factor comprises a plurality of different weighting factors and each of the different weighting factors relates to the importance of the main term or a subordinate term in the term group.